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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,469	04/22/2005	Fabio Vignoli	NL 021053	1612

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BRIARCLIFF MANOR, NY 10510

EXAMINER

SAINT CYR, LEONARD

ART UNIT	PAPER NUMBER
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2626

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/532,469	Applicant(s) VIGNOLI, FABIO	
	Examiner LEONARD SAINT CYR	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2010 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 02/04/10 have been fully considered but they are not persuasive.

Applicant argues that neither Schroder, nor Kaufholz nor Kataoka nor Rajan teach that subsequent utterance originating from the second position will be discarded if not preceded by the recognition of the predetermined keyword originating from the second position (Amendment, pages 12 – 18).

The examiner disagrees, since Schroder et al., disclose that “an operator-control command which, **after its input by the first user, allows voice commands from a second user to be accepted may be advantageously provided.** It is checked **whether the speech input was by the user already previously noted in method step 10. If this is the case, the input command for controlling the voice-controlled system is used in method step 8, for example for menu control or navigation.** The user can carry out operator control from any desired place in the room without taking along the remote control unit” (determining whether the speech input was previously used, and if yes use the speech input for menu control or navigation suggest discarding non predetermined keyword originating from the second position; col.2, lines 39 - 44; col.3, lines 49 - 52; col.1, lines 44 - 47).

Applicant argues that neither Schroder, nor Kaufholz nor Kataoka nor Rajan teach utterances of other users at other position are discarded (Amendment, pages 15 – 18).

The examiner disagrees, since Rajan discloses that “the computer system 7 is also arranged to process the signals from each of the microphones in order to separate the speech signals from each of the users 1-1, 1-2 and 1-3. A system has been described above which can separate the speech from multiple users even when they are speaking together. As those skilled in the art will appreciate, **the system can be used to separate any mix of acoustic signals from different sources.** For example, if there are a number of users playing musical instruments, then the system may be **used to separate the music generated by each of the users.** This can then be used in various music editing operations. For example **it can be used to discard (“remove”) one or more of the musical instruments from the soundtrack**” (paragraphs 22, and 61).

Applicant argues that neither Schroder, nor Kaufholz nor Kataoka nor Rajan teach discriminate between sounds originating from users who are located in front of each other relative the microphone array (Amendment, pages 15 – 18).

The examiner disagrees, since Rajan discloses " the computer system 7 is also arranged to process the signals from each of the microphones in order to (“separate”) the speech signals from each of the users 1-1, 1-2 and 1-3” (**users 1-1, and 1 - 3 are located in front of each other** relative to the microphone array; paragraph 22).

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1- 10,15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schroder et al. (US Patent 7,136,817) in view of Kaufholz (US Patent 7,050,971), and further in view of Rajan (US PAP 2002/0150263).

Regarding claims 1 and 9, Schroder et al. discloses a speech control unit for controlling an apparatus on basis of speech, comprising:

a microphone array, comprising multiple microphones for receiving respective audio signals (see col. 4, lines 44 - 46); and

a speech recognition unit for creating an instruction for the apparatus based on recognized speech items of the speech signal (see col. 4, lines 60-62, where the commands are recognized speech items), and a keyword recognition system for recognition of a predetermined, keyword that is spoken by the user and which is represented by a particular audio signal and the speech control unit being arranged to control the beam forming module (see col. 4, lines 60 - 62, where the commands are the predetermined keywords spoken), on basis of the recognition of the predetermined keyword, in order to enhance second components of the audio signals which represent a subsequent utterance originating from a second orientation of the user relative to the microphone array (see col. 2, lines 38 - 44);

wherein the recognition of the predetermined keyword at the second orientation so that the subsequent utterance originating from the second orientation are accepted ("The input command for controlling the voice-controlled system is used in method step 8, for example for menu control or navigation"; col.2, lines 39 – 44, col.3, lines 49 – 52);

wherein the subsequent utterance originating from the second orientation will be discarded if not preceded by the recognition of the predetermined keyword originating from the second orientation ("The input command for controlling the voice-controlled system is used in method step 8, for example for menu control or navigation"; col.2, lines 39 – 44, col.3, lines 49 – 52; col.1, lines 44 - 47).

Schroder et al. do not disclose a beam forming module for extracting a speech signal of a user; calibrates the beam forming module to allow the user from the first position to the second position. However this feature is well known in the art as indicated by Kaufholz. Kaufholz discloses a speech recognition apparatus that utilizes a beam former that creates a higher performance and resolution of the resulting microphone signal. The beam former may also select or even tract an audio source. Typically, the loudest source signal is identified (see col. 5, lines 8-15). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize a beam forming module with the apparatus of Kaufholz for the benefit of a higher performance and resolution of the resulting microphone signal.

However Schroder et al in view of Kaufholz do not specifically teach that utterances of other users at other positions are discarded, the second position including an orientation and a distance relative to the microphone array, and the speech control

unit being configured to discriminate between sounds originating from users who are located in front of each other relative the microphone array.

Rajan discloses that current techniques employ an array of microphones and an adaptive beamforming technique **in order to discard (“isolate”) the speech from one of the users**. The computer system 7 is also arranged to process the signals from each of the microphones in order to discriminate (**“separate”**) the speech signals from each of the users 1-1, 1-2 and 1-3 (**users 1-1, and 1 - 3 are located in front of each other**). The predetermined curved plots used may be circular arcs, in which case, the spectrogram processing module 33 **will be able to estimate, not only the orientation (“direction”) from which the speech emanated, but also the distance from the microphones of that user** (paragraph 2, lines 6 – 8; paragraph 22, last six lines; paragraph 57, last six lines).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to **separate** the speech signals from each of the users 1-1, 1-2 and 1-3 as taught by Rajan in Schroder et al in view of Kaufholz, because that would help **effectively identifies the speech source (j) from which the corresponding signal value has been received** (paragraph 45).

Regarding claim 2, Schroder et al. further disclose that the keyword recognition system is arranged to recognize the predetermined keyword that is spoken by another user and the speech control unit being arranged to control the beam forming module, on basis of this recognition, in order to enhance third components of the audio signals

which represent another utterance originating from a third position of the other user relative to the microphone array (see col. 2, lines 35-44).

Regarding claim 3, Schroder et al. further disclose that a first one of the microphones of the microphone array is arranged to provide the particular audio signal to the keyword recognition system (see col. 4, lines 56-62).

Regarding claim 4, Schroder et al. further disclose that the beam forming module is arranged to determine a first position of the user relative to the microphone array (see col. 4, lines 51-56).

Regarding claim 5, Schroder et al. further disclose that an apparatus comprising: a speech control unit for controlling the apparatus on basis of speech as claimed in claim 1 (see col. 4, lines 60-62); and

processing means for execution of the instruction being created by the speech control unit (see col. 4, lines 60-62).

Regarding claim 6, Schroder et al. discloses an apparatus as claimed in claim 5, characterized in being arranged to show that the predetermined keyword has been recognized (see fig. 1, col. 3, lines 32- 45).

Regarding claim 7, Schroder et al. discloses an apparatus as claimed in claim 6, characterized in comprising audio generating means for generating an audio signal in order to show that the predetermined keyword has been recognized (see fig. 1, col. 3, lines 32-45).

Regarding claim 8, Schroder et al. discloses a consumer electronics system comprising the apparatus as claimed in claim 5 (see col. 4, lines 63-65).

As per claims 10, and 15, Kaufholz further discloses that the user is informed by indications that the speech control unit is not active, is in active state and ready to receive the utterance or is in a state of calibration ("the controller can also check which part is active at the moment of receiving input from the user"; col.7, lines 42 - 54).

As per claim 20, Schroder et al., in view of Kaufholz, and further in view of Rajan suggest that the beam forming module is connected to the microphone array, and the keyword recognition system is connected to one microphone of the microphone array for detecting the predetermined keyword, the keyword recognition system being further connected to the beam forming module for providing the detected predetermined keyword to the beam forming module (Kaufholz "The apparatus 220 has two microphone inputs 224 and 226 for receiving the microphone signals from the respective outputs 204 and 214. All microphone signals (in the example two external microphone signals and one internal microphone signal) are supplied to a beam former

240. The beam former combines the microphone signals, resulting in a higher performance and resolution of the resulting microphone signal”; col.4, line 58 – col.5, line 40; see also figs 2, and 3).

4. Claims 11 -14, and 16 – 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schroder et al. (US Patent 7,136,817) in view of Kaufholz (US Patent 7,050,971), and further in view of Rajan (US PAP 2002/0150263), and further in view of Kataoka (US PAP 2002/0181723).

As per claims 11-14, and 16 -19, Schroder et al., in view Kaufholz, and further in view of Rajan do not specifically teach that indications include an animal in a sleeping state indicating inactive state or in an awake state indicating active state; wherein the progress of the active state is indicated by angle of ears of the animal; wherein the ears are fully raised at a beginning of the active state, and fully down at an end of the active state; wherein the animal has an understanding look when the utterance is recognized and a puzzled look when the utterance is not recognized.

Kataoka discloses that the direction of the targeted voice then can be inputted to the servo system, **whereby a face, eyes, an upper body, or the like of the robot can controlled accordingly (paragraph 38, last five lines); but** Kataoka does not teach active and inactive states of the speech control unit based on indications states of an animal. **However, since Kataoka disclose that the robot may take a form of an animal such as a mouse, a dog, a cat, or the like...after all, it is satisfactory so far as the robot has capability of the posture control, head motion or eye direction**

shifts toward the direction of the sound source (paragraphs 36, last five lines; paragraph 38, last four lines). One having ordinary skill in the art at the time the invention was made would have it found obvious to indicate different states through an animal in Kataoka, so that voice recognition can be performed with an input of a delay sum corresponding to the directivity direction (Abstract, last two lines).

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LEONARD SAINT CYR whose telephone number is (571) 272-4247. The examiner can normally be reached on Mon- Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone

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number for the organization where this application or proceeding is assigned is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or (571)-272-1000.

LS

04/28/10

/Richemond Dorvil/

Supervisory Patent Examiner, Art Unit 2626